REMARKS

The Office Action of March 29, 2007 has been received and its contents carefully considered. Reconsideration is respectfully requested in view of the amendments above and the following comments.

Claims 1-8, 10-13, and 16-24 were cancelled without prejudice in the previous Submission of January 29, 1007. Claims 9, 14 and 15 were cancelled in the previous Amendment of August 30, 2006. Claims 25, 27, 29, 32, 33 and 36 have been amended herein. New claim 47 has been added, and incorporates the subject matter of claims 27, 32 and 36. Claims 30 and 35 have been cancelled, and their subject matter incorporated into independent claim 25. No new matter has been added. Claims 25-29 and 31-34 and 36-47 are currently pending in the instant application.

I. Personal Interview with Examiner of August 7, 2007

Applicant's representative, Laleh Jalali, would like to thank Examiner Golub for granting a personal interview regarding the instant application on August 7, 2007. During the interview, the merits of claims 25, 35 and 37 were discussed. Agreement was reached during the interview that the subject matter of claims 30 and 35 be incorporated into independent claim 25 and that claim 25 be further amended to specify that the top portion of the TEC has an upper surface that is flat in its entirety.

During the interview, the Examiner also suggested incorporating the subject matter of dependent claim 37 into independent claim 25. The suggested change to claim 25, however, has not been made, to the extent that, as mentioned by the

undersigned during the personal interview, the features of dependent claim 37 would not be required in the independent claim to overcome the prior art of record.

The Examiner also suggested amending Fig. 2 to depict an electrical connection from the upper portion of the upper surface of the substrate to the laser light source, and to amend the Abstract to conform to the language of independent claim 25 as amended.

Changes to Fig. 2 and to the Abstract have, as a result, been made in the instant Amendment. The changes to Fig. 2 submitted herein include the depiction of the electrical connection or "leads" mentioned in paragraph [0020] of the original specification. To the extent that the electrical connection is being added herein to Fig. 2 and supplied with a reference numeral "105" therein, paragraph [0020] of the specification is being sought to be amended herein to specifically mention reference numeral "105" as corresponding to the "leads" mentioned in that paragraph.

The Examiner's outstanding rejections of the claims will be discussed further below.

II. Objections to the Claims

Claims 28 and 43* have been objected to for being improperly dependent from independent claim 25. In response, claims 28 and 43 have been amended herein to properly depend from claims 27 and 26, respectively, as suggested by the Examiner.

* It is noted that the Office Action erroneously refers to claim "23" in the statement of the objection to the claims. However, it has been assumed that a reference to claim "23" was meant to actually be a reference to claim 43, to the extent that no claim currently exists as part of the pending claims.

III. **Rejection under 35 USC 102(b)**

Claims 25-30, 32-36, and 42-46 were rejected under Section 102(b) as being anticipated by Stewart et al.

Reconsideration is respectfully requested in view of the amendments and the following comments.

Stewart et al. fail to disclose an optoelectronic module as recited in sole independent claim 25: (1) where the thermo-electric cooler has a top portion including a flat top surface, the flat top surface making up an entire top surface of the top portion and being substantially parallel to the lower surface of the substrate; and/or (2) where a laser light source is disposed on the flat top surface of the top portion of the thermo-electric cooler. In Stewart et al., the top portion of the thermo-electric cooler does not have a flat surface making up the entire top surface thereof and substantially parallel to the lower surface of the substrate, but a stepped surface. Stewart et al. have a temperature cooling device 200 that has a stepped upper portion 112 as shown. In addition, in Stewart et al., as seen for example in Fig. 1 of that reference, the laser light source 106 is disposed on a wall that is perpendicular to the bottom surface of head structure 102 rather than substantially parallel to it. Stewart et al. in fact need to place the laser light source 106 on the perpendicular surface 130 of top portion 112 of temperature control device 200 in order to allow the laser light source to be "positioned and aligned with the window 304 such that optical signals generated by the laser emitter 106 are aimed at and transmitted through the window." Stewart et al., paragraph [0023].

In addition, Stewart et al. fail to disclose, as recited in dependent claim 27, a laser light control device that is disposed on the upper portion of the upper surface of the substrate, the electrical connection electrically coupling the laser light control device to the laser light source.

As set forth in the specification at page 6, paragraph 20, the upper portion of the stepped surface of the substrate allows the "e.g. a driver or an amplifier" to be placed in close proximity of the laser light source. Clearly, "e.g. a driver or an amplifier" encompasses a laser light control device as used in the claims, and it is not the other way around as seems to be suggested in the Office Action. The specification, when referring to a conductive pathway in the context of the "e.g. a driver or an amplifier," refers to "electrical connections" or "leads," but certainly not to "control devices" as suggested in the Office Action. Moreover, a person skilled in the art would know that a laser light control device, that is, a control device to control laser light, must include an integrated circuit. This is standard knowledge in the art. See, as noted in our previous response, for example:

http://www.maxim-ic.com/glossary/index.cfm/Ac/V/ID/192/Tm/Laser_Driver

which defines a laser driver as "[a]n IC that supplies modulated current to a laser diode in response to an input serial-data stream." Thus, neither the specification nor common knowledge as reinforced by extrinsic evidence such as the web-page noted above would support a conclusion that a laser light control device could consist of a conductive pathway.

In addition, Stewart et al. fail to disclose, as recited in dependent claim 28, a driver or an amplifier, as recited in dependent claim 28. First, a driver, as recognized

by a skilled person, is a structural component, and not a phenomenon such as "current." It is not seen in this respect how it could be said that "the laser light control device ... includes a driver [current]" as set forth at page 3 of the Office Action. The rhetorical question becomes: how can a control device "include" current? Second, as noted above, a "driver" in the art of laser technology has a very specific meaning that does not encompass merely "current," but rather must include an IC. See definition of "driver" above, and information at web-page cited above.

Moreover, to the extent that Stewart et al. do not disclose, as cited in dependent claim 29, a top planar surface of the top portion of the thermo-electric cooler, they could not possibly disclose a top planar surface being substantially orthogonal to the thermo-electric elements of the thermo-electric cooler.

The rejection of claim 30 has been mooted by virtue of its cancellation.

Additionally, Stewart et al. fail to disclose, as recited in dependent claim 32, a plurality of vias extending through the substrate body, the vias being electrically connected by way of the substrate body to the thermo-electric cooler and adapted to dissipate thermoelectricity from the thermo-electric cooler. Nor do Stewart et al. disclose, as recited in dependent claim 36, a plurality of vias extending through the substrate body, the vias being electrically connected by way of the substrate body to the laser light control device as recited in dependent claim 36. In this regard, the attention of the Examiner is invited to Fig. 2 of the instant invention. There are no leads in the shown embodiment to the extent that the vias reach their destination by way of the substrate body. However, Stewart et al. need bond wires 110 (see Stewart et al.'s Fig. 3) to connect the leads 104 to various components on the TEC.

Furthermore, Stewart et al. fail to disclose, as set forth in dependent claim 33, a thermo-electric cooler and an upper portion of the stepped surface that are disposed such that the upper portion is substantially co-planar with the flat top surface of the thermo-electric cooler. In Stewart et al, as best seen in Stewart et al.'s Fig. 2, a portion of the upper surface of head structure 102 is in fact co-planar with a surface of the top portion 112 of the temperature control device 200. However, the top surface of device 200 in Stewart et al. is not flat, but stepped, and, as a result, the co-planarity is only with a portion of the stepped top surface.

Moreover, the Office Action has not made a prima facie case for the proposition that Stewart et al. disclose a one piece component as the substrate as recited in dependent claim 34. There appears to be no indication in Stewart et al. that the header structure is a one-piece device.

The rejection of claim 35 has been mooted by virtue of its cancellation.

In view of the above, it is submitted that independent claim 25 is patentable over Stewart et al. It is further submitted that dependent claims 26-29, 32-36 and 42-46 are patentable over Stewart et al. for being dependent from independent claim 25, and further for the particular additional features that they recite.

Accordingly, the Examiner is respectfully requested to reconsider and withdraw her rejection of the claims under Section 102(b).

IV. Rejection under 35 USC 103(a)

A. Stewart et al. in view of Watts et al.:

Claim 31 was rejected under Section 103(a) as being rendered obvious over Stewart et al. in view of Watts et al. Reconsideration is respectfully requested in view of the following comments.

With respect to the above the Office Action states that it would have been obvious to place the laser in Stewart et al. directly on top of the TEC for improving the heat dissipation from the laser. However, Stewart et al. teach away from such a modification. In Stewart et al., a laser submount 108 is provided to accommodate the laser emitter 106. As set forth at page 2, paragraph 23 in Stewart et al., the laser emitter is positioned and aligned with the window 304 such that its optical signals are aimed at and transmitted through this window 304. As further seen in the figures, laser emitter 106 is a relatively very small piece accommodated on the submount 108, and fed with electricity by way of the submount (see Stewart et al. Fig. 3). If the laser emitter 106 were to be placed directly on the temperature control device 200, the alignment of the optical signals therefrom with respect to window 304 would be lost, and, in addition, the wire bonds would have to be directly connected to the laser 106, a technically difficult feat for a small sized laser. In addition, as set forth in paragraph 23 of Stewart et al., the submount 108 may incorporate one or more integrated passive components, such as resistors, capacitors and inductors to provide improved impedance matching and signal conditioning. If modified as suggested by the Examiner, Stewart et al. would lose the potential for the above

benefits of improved impedance matching and signal conditioning as noted in their specification.

In view of the above, it is submitted that claim 31 is patentable over Stewart et al. in view of Watts et al.

Accordingly, the Examiner is respectfully requested to reconsider and withdraw her rejection of claim 31under Section 103(a) over Stewart et al. in view of Watts et al.

B. Stewart et al. in view of Acklin et al.:

Claims 37-39 were rejected under Section 103(a) as being unpatentable over Stewart et al. in view of Acklin et al. Reconsideration is respectfully requested in view of the following comments.

With respect to the above, the Office Action suggests that, to the extent that in Stewart et al., the laser signal is emitted in the desired direction, the light steering assembly (as recited in claims 37-39) "is not required," and buttresses the above with a reference to MPEP 2144.04.

The Office Action fails to make a prima facie case for obviousness at least for the reasons below.

The relevant excerpt from MPEP 2144.04 referred to by the Examiner is provided below:

> **Omission of an Element and Its Function Is Obvious If the Function of the Element Is Not Desired**
>
> *Ex parte Wu*, 10 USPQ 2031 (Bd. Pat. App. & Inter. 1989) (Claims at issue were directed to a method for inhibiting corrosion on metal surfaces using a composition consisting of epoxy resin, petroleum sulfonate, and hydrocarbon diluent. The claims were rejected over

> a primary reference which disclosed an anticorrosion composition of epoxy resin, hydrocarbon diluent, and polybasic acid salts wherein said salts were taught to be beneficial when employed in a freshwater environment, in view of secondary references which clearly suggested the addition of petroleum sulfonate to corrosion inhibiting compositions. The Board affirmed the rejection, holding that it would have been obvious to omit the polybasic acid salts of the primary reference where the function attributed to such salt is not desired or required, such as in compositions for providing corrosion resistance in environments which do not encounter fresh water.). See also *In re Larson*, 340 F.2d 965, 144 USPQ 347 (CCPA 1965) (Omission of additional framework and axle which served to increase the cargo carrying capacity of prior art mobile fluid carrying unit would have been obvious if this feature was not desired.); and *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975) (deleting a prior art switch member and thereby eliminating its function was an obvious expedient).

A reading of MPEP 2144.04 without a doubt demonstrates that the Office Action's citing of the same in the context of the obviousness rejection involving claims 7-39 is in error. MPEP 2144.04 applies only when the claimed invention omits something shown in the prior art, and not the other way around. If embodiments as recited in any of claims 37-39 omitted an item shown in the prior art, MPEP 2144.04 could have arguably been relevant assuming appropriate references were being applied against the claims. This is not the case in the context of the instant obviousness rejection.

The above notwithstanding, Stewart et al. in fact teach away from any modulation of the optical signals from the laser in the laser package, for the same reasons advanced by the Examiner which attempt to support a combination of Stewart et al. and Acklin et al. In Stewart et al., as admitted in the Office Action, there is no need to place an optical device for redirecting the optical signals from the

laser emitter, because the laser emitter is positioned the aim the optical signals through the window 304.

In view of the above, it is submitted that claims 37-39 are patentable over Stewart et al. in view of Acklin et al.

Accordingly, the Examiner is respectfully requested to reconsider and withdraw her rejection of the claims under Section 103(a) over Stewart et al. in view of Acklin et al.

C. Stewart et al. in view of Rosenberg et al.:

Claim 40 was rejected under Section 103(a) as being unpatentable over Stewart et al. in view of Rosenberg et al. Reconsideration is respectfully requested in view of the following comments.

Claim 40 is patentable over Stewart et al. in view of Rosenberg et al. at least by virtue of its dependence from independent claim 25. In fact, Rosenberg et al. does nothing to remedy the deficiencies of Stewart et al. with respect to the subject matter of claim 25.

Accordingly, the Examiner is respectfully requested to reconsider and withdraw her rejection of claim 40 under Section 103(a) over Stewart et al. in view of Rosenberg et al.

D. Stewart et al. :

Claim 41 was rejected under Section 103(a) as being unpatentable over Stewart et al. Reconsideration is respectfully requested in view of the following comments.

Claim 41 is patentable over Stewart et al. at least by virtue of its dependence from independent claim 25. Looking at Stewart et al., a person of ordinary skill would have no reason to modify that reference as suggested by the Examiner. The reason stated in the Office Action of "accommodating the TEC inside the optical module" does not buttress the argument for a combination. In Stewart et al., the TEC is already accommodated inside the module.

Accordingly, the Examiner is respectfully requested to reconsider and withdraw her rejection of claim 41 under Section 103(a) over Stewart et al. in view of Rosenberg et al.

V. New Claim 47:

None of the prior art of record, either alone or in combination, either disclose or render obvious the subject matter of new claim 47, at least for the reason that claim 47 incorporates the subject matter of claim 25 discussed above.

CONCLUSION

In view of the foregoing, Applicant respectfully submits that the present application is now in condition for allowance. If the Examiner believes a telephone conference would expedite or assist in the allowance of the present application, the Examiner is invited to call the undersigned attorney at (703) 633-0944.

Please charge Deposit Account No. 50-0221 for any shortage of fees in connection with this response.

Respectfully submitted,

Intel Americas

Date: 08-15-07

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In the Drawings:

The attached sheet of drawings includes changes to Fig. 2. This sheet, which includes only Fig. 2 thereon, replaces the original sheet including Fig. 2. In Fig. 2, the previously omitted electrical connection from the upper portion of the upper surface of the substrate to the laser light source has been added.

Attachment: Replacement Sheet

Annotated Sheet Showing Changes

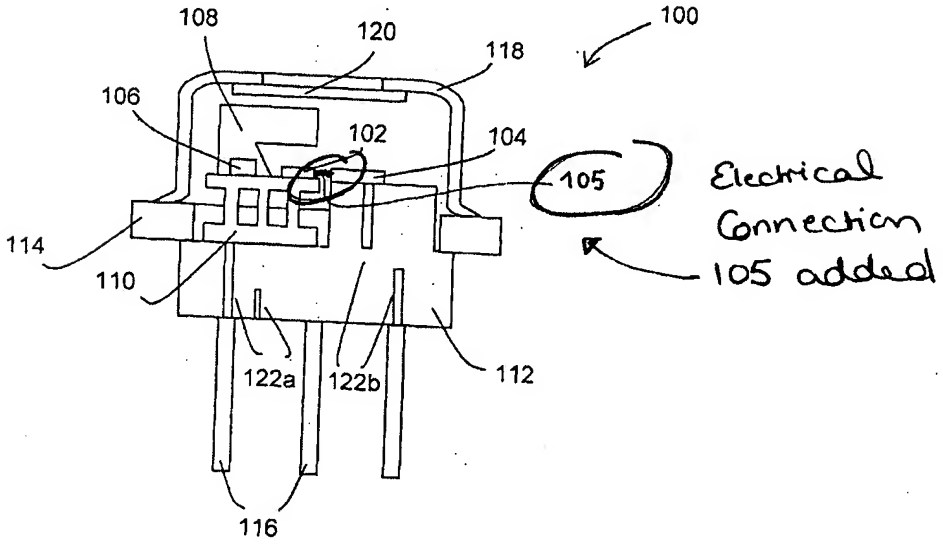
108
120
118
100
106
102
104
105
Electrical
Connection
105 added
114
110
122a
122b
112
116

FIG. 2